

## ABSTRACT

The invention provides methods and kits for primer extension of PNA-DNA chimera from template nucleic acids using polymerases, nucleotide 5'-triphosphates, and primer extension reagents. Structural requirements of the chimera for primer extension include 5 to 15 contiguous PNA monomer units, 3 or more contiguous nucleotides, and a 3' hydroxyl terminus. The chimera and/or a nucleotide is labelled with fluorescent dyes or other labels. The methods include DNA sequencing, DNA fragment analysis, reverse transcription, mini-sequencing, chromosome labelling, amplification, and single nucleotide polymorphism (SNP) detection.